

-17-

What is Claimed is:

1. A compressor comprising:

a cylinder block for compressing, discharging, and drawing refrigerant;

a piston for reciprocating inside of the cylinder block;

5 a crank shaft for rotating as the crank shaft receives a torque from an electric driving part, and having an eccentric part at an end thereof;

a connecting rod having one end coupled to the piston, and the other end coupled to the eccentric part at the crank shaft for converting rotating movement of the crank shaft into a linear movement to move the piston; and

10 a supplementary torque providing part for reducing a speed of the piston in compression of the refrigerant, and accelerates a speed of the piston in drawing the refrigerant.

2. The compressor as claimed in claim 1, wherein the supplementary torque
15 providing part is positioned such that compression, extension, and restoration of the supplementary torque providing part are made along a direction of movement of the piston.

3. The compressor as claimed in claim 2, wherein the supplementary torque
20 providing part includes a first elastic member having one end fixed to a stationary part, and the other end in contact with the eccentric part for extending or contracting along a moving direction of the piston in compression of the refrigerant to increase a level of torque storage therein.

25 4. The compressor as claimed in claim 3, wherein the first elastic member

-18-

includes a plate spring for providing a restoring force to the eccentric part in a direction opposite to a direction of movement of the piston in compression of refrigerant.

5 5. The compressor as claimed in claim 3, wherein the first elastic member includes a compression spring for providing a restoring force to the eccentric part in a direction opposite to a direction of movement of the piston in compression of refrigerant.

6. The compressor as claimed in claim 1, wherein the piston includes;
a first piston and a second piston, and
10 the supplementary torque providing part includes;
a second elastic member between the first, and second pistons, with both ends thereof connected to the first and second pistons, for being compressed when the refrigerant is compressed, and being restored when the refrigerant is drawn.

15 7. The compressor as claimed in claim 6, wherein the second elastic member includes at least one of a coil spring, and a plate spring.

8. The compressor as claimed in claim 7, wherein the coil spring is conical, of which diameter becomes the grater as it goes the more toward a side the connecting rod
20 is connected.

9. The compressor as claimed in claim 1, wherein the piston includes at least more than three pieces, and the supplementary torque providing part is provided between adjacent pieces of pistons.

-19-

10. The compressor as claimed in claim 1, wherein the connecting rod includes a first connecting part connected to the piston, and a second connecting part connected to the eccentric part at the crank shaft, and

the supplementary torque providing part includes at least one third elastic member between the first connecting part and the second connecting part of the connecting rod, having both ends connected to the first connecting part and the second connecting part respectively.

11. The compressor as claimed in claim 10, wherein the third elastic member includes a plate spring.

12. The compressor as claimed in claim 10, wherein the third elastic member includes a coil spring.

13. The compressor as claimed in claim 12, wherein the coil spring is connected to the connecting parts of the connecting rod by forming projection on outside surfaces of the connecting parts along a length direction thereof respectively, and holding opposite ends of the coil spring with the projections.

14. The compressor as claimed in claim 13, wherein the projection includes a thread.

15. The compressor as claimed in claim 13, wherein the projections are at least two projections each of which is outwardly sloped as the projection goes toward an outer side from a side connected to the spring.

-20-

16. The compressor as claimed in claim 10, wherein the third elastic member is a flexible bar or a flexible plate.

5 17. The compressor as claimed in claim 10, wherein the connecting parts of the connecting rod are connected to the third elastic member by at least one of joining type selected from bolts, rivets, and welding.

18. The compressor as claimed in claim 1, wherein the connecting rod includes;
10 a first connecting part connected to the piston, and a second connecting part connected to the eccentric part at the crank shaft, and

the supplementary torque providing part includes a fourth elastic member between the first connecting part and the second connecting part, and having opposite ends connected to the first connecting part and the second connecting part respectively,
15 to form an outer circumferential surface, and a fifth elastic member fitted inside of the fourth elastic member.

19. The compressor as claimed in claim 18, wherein the first connecting part and the second connecting part include a first holder and a second holder respectively at
20 opposite surfaces thereof, and

the fifth elastic member includes big ends at opposite ends for preventing breaking away of the fifth elastic member when the big ends are held in the holders, respectively.

25 20. The compressor as claimed in claim 19, wherein the first holder and the

-21-

second holder include spaces formed greater than the big ends for respectively holding the big ends.

21. The compressor as claimed in claim 19, wherein the first holder and the
5 second holder include fitting steps for fitting the fourth elastic member, respectively.

22. The compressor as claimed in claim 18, wherein the fourth elastic member is a coil spring.

10 23. The compressor as claimed in claim 18, wherein the coil spring is connected to the connecting parts of the connecting rod by forming at least two projections on outside surfaces of the connecting parts along a length direction thereof respectively, and holding opposite ends of the coil spring between the projections.

15 24. The compressor as claimed in claim 19, wherein the first elastic member includes at least one of flexible bar, and flexible plate.

25. The compressor as claimed in claim 19, wherein the fifth elastic member includes at least one of a plate spring, and a coil spring.

20

26. The compressor as claimed in claim 19, wherein the connecting parts of the connecting rod is connected to the fifth elastic member with at least one of joining type selected from bolt, rivet, and welding.